

## DISCOVERY Planetary Mission Operations Concepts

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### ABSTRACT

The NASA Discovery Program of small planetary missions will provide opportunities to continue scientific exploration of the solar system in today's cost-constrained environment. Using a multi-disciplinary team, the Jet Propulsion Laboratory has developed plans to provide mission operations within the financial parameters established by the Discovery Program. This paper describes experiences and methods that show promise of allowing the Discovery Missions to operate within the program cost constraints while maintaining low mission risk, high data quality, and responsive operations.

Planetary mission operations concepts are surveyed, with an emphasis on low-cost strategies and experiences, used both at the Jet Propulsion Laboratory and at other institutions. The major factors that determine mission operations cost are identified and approaches to manage mission operations costs are presented. A taxonomy of mission operations functions is described and examples of several Discovery-class organizational approaches are presented. The paper also describes multi-mission ground system services that will allow Discovery missions to share tracking, data capture, command, and navigation support.

The Discovery Program will encourage the development of missions with smaller, more focused, spacecraft. We in mission operations must respond with correspondingly small, efficient mission operations concepts and ground data systems.

\* Mr. Coffin will be reporting for the JPL Discovery Operations Concept Team